Ultrasound in Medicine & Biology

VOL.
8
1982

Title Section and Volume Contents for Volume 8 (1982)

PERGAMON PRESS

OXFORD · NEW YORK · TORONTO
SYDNEY · PARIS · FRANKFURT

ULTRASOUND IN MEDICINE AND BIOLOGY

WORLD FEDERATION FOR ULTRASOUND IN MEDICINE AND BIOLOGY

President: GEORGE KOSSOFF, *Sydney, Australia*
Vice-President: WILLIAM GARRETT, *Sydney, Australia*
Past-President: H. R. MULLER, *Basel, Switzerland*
President-Elect: HORACE THOMPSON, *Shreveport, U.S.A.*
Treasurer: BARRY GOLDBERG, *Philadelphia, U.S.A.*
Secretary: CHRISTOPHER HILL, *Sutton, England*
Editor of the Journal: DENIS WHITE, *Kingston, Canada*
Councillors: M. FUKUDA, *Sapporo, Japan*
H. G. TRIER, *Bonn, G.F.R.*
FRANCIS WEILL, *Besancon, France*

AFFILIATED SOCIETIES

Society	*Secretary*
American Institute of Ultrasound in Medicine (AIUM)	M. K. Meinerz (Assistant Executive) 4405 E-W Highway, Suite 504, Bethesda, MD 20814, U.S.A.
Australian Society for Ultrasound in Medicine (ASUM)	J. Jellins Box R 374, P.O. Royal Exchange, Sydney, NSW 2000, Australia.
European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB)	T. Nordshus Department of Radiology, Rontgen-Barneklinik, Rikshospitalet, Oslo 1, Norway
Japan Society of Ultrasonics in Medicine (JSUM)	H. Takeuchi Juntendo University—School of Medicine, 2-1-1 Hongo, Bunkyo-ku, Tokyo 113, Japan.
Sociedade Brasileira de Ultra-som em Medicina e Biologia (SUSEM)	M. A. M. Pavani Praca Germania, 45–15° andar CEP 01456, Sao Paulo, Brazil.
Societas Internationalis pro Diagnostica Ultrasonica in Ophthalmologia (SIDUO)	J. M. Thijssen Universiteitsklinik voor Ooghkeelkunde, Philips van Leydenlaan 15, Nijmegen, The Netherlands.
South African Medical Ultrasound Society (SAMUS)	E. Goudie P.O. Box 6705, Johannesburg, S. Africa.

Publishing Office: European Publishing Corporation Ltd., 84–86 Malahide Road, Coolock, Dublin 5, Republic of Ireland (Phone Dublin 475377; Telex 25670)

Subscription and Advertising Offices: Headington Hill Hall, Oxford OX3 0BW (Phone Oxford 64881; Telex 83177)

Published bimonthly. *Annual subscription rates* (1983). For libraries, university departments, government laboratories, industrial and other multiple-reader institutions U.S. $150.00 per annum (including package and postage). Two year rate (1983–84) U.S. $285.00. Special reduced rates are available to members of organizations affiliated to the World Federation for Ultrasound in Medicine and Biology.

Specially reduced rates to individuals: In the interests of maximizing the dissemination of the research results published in this important international journal, we have established a two-tier price structure. Any individual, whose institution takes out a library subscription, may purchase a second or additional subscription for personal use at the much reduced rate of U.S. $50.00. Subscription enquiries from customers in North America should be sent to: Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A., and for the remainder of the world to: Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England.

Microform Subscriptions and Back Issues: Back issues of all previously published volumes are available in the regular editions and on microfilm and microfiche. Current subscriptions are available on microfiche simultaneously with the paper edition and on microfilm on completion of the annual index at the end of the subscription year.

Copyright © 1982 Pergamon Press Ltd.

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organisations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

U.S. Copyright Law applicable to users in the U.S.A.

The Article Fee Code on the first page of an article in this journal indicates the copyright owner's consent that, in the U.S.A., copies may be made for personal or internal use provided the stated fee for copying beyond that permitted by Section 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance should be forwarded with a copy of the first page of the article to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, U.S.A. If a code does not appear, copies of the article may be made without charge, provided permission is obtained from the publisher. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works or for resale. Specific written permission must be obtained from the publisher for such copying. In case of doubt please contact your nearest Pergamon office.

PERGAMON PRESS
HEADINGTON HILL HALL, OXFORD OX3 0BW, ENGLAND
MAXWELL HOUSE, FAIRVIEW PARK, ELMSFORD, NY 10523, U.S.A.

VOL
8
198

LIST OF CONTENTS

NUMBER 1

	i	Editorial
Kjell Hatteland and **Bjarne K. H. Semb**	1	Assessment of aortic regurgitation by means of pulsed Doppler ultrasound
D. Nicholas, C. R. Hill and **D. K. Nassiri**	7	Evaluation of backscattering coefficients for excised human tissues: principles and techniques
D. Nicholas	17	Evaluation of backscattering coefficients for excised human tissues: results, interpretation and associated measurements
Diane C. Almond and **W. I. J. Pryce**	29	Characterisation of *in vivo* placental ultrasonic images using digital techniques—a preliminary report
S. Z. Child, B. Vives, K. Smachlo, C. W. Fridd, J. D. Hare, C. A. Linke, H. T. Davis and **E. L. Carstensen**	41	Ultrasonic treatment of tumors—III. High intensity, low frequency exposures
R. D. Hogan, T. D. Franklin, F. J. Fry, K. A. Avery and **K. M. Burke**	45	The effect of ultrasound on microvascular hemodynamics in skeletal muscle: effect on arterioles
P. Zuech, R. S. C. Cobbold, M. Kassam and **K. W. Johnston**	57	The application of CCD transversal filters for real-time spectral analysis of Doppler ultrasound arterial signals
Thore Pedersen, Kjell Hatteland and **Bjarne K. H. Semb**	71	Bubble extraction by various arterial filters measured *in vitro* with Doppler ultrasound techniques
	83	Letters
	89	Bibliography
	119	Reports
	125	Calender

NUMBER 2

P. N. Burns, M. Halliwell, P. N. T. Wells and **A. J. Webb**	127	Ultrasonic Doppler studies of the breast
J. Merton, D. Nicholas, C. R. Hill, S. Grover, M. Queenan and **D. Cosgrove**	145	Ultrasonic diffraction scanning of the thyroid

VOL. 8 1982

R. A. Lerski, P. Morley, E. Barnett, P. R. Mills, G. Watkinson and **R. N. M. MacSween**	155	Ultrasonic characterisation of diffuse liver disease—The relative importance of frequency content in the *A*-scan signal
F. M. Greene, Jr., K. Beach, D. E. Strandness, Jr., G. Fell and **D. J. Phillips**	161	Computer based pattern recognition of carotid arterial disease using pulsed Doppler ultrasound
Ralph E. Beard, Richard L. Magin, Leon A. Frizzell and **Charles A. Cain**	177	An annular focus ultrasonic lens for local hyperthermia treatment of small tumors
D. H. Groves, T. Powalowski and **D. N. White**	185	A digital technique for tracking moving interfaces
R. Reibold	191	Microwatt ultrasonic power determination using laser interferometry
		Book Reviews
P. N. T. Wells	199	Ultrasound
Roland Blackwell	201	Diagnostic Ultrasound in Obstetrics Clinics in Diagnostic Ultrasound 3
David Cosgrove	202	Medical Imaging
P. N. T. Wells	203	Introduction to Diagnostic Sonography
R. J. Blackwell	203	Manual of Ultrasonography
M. Halliwell	204	Clinical Ultrasound Review, Vol. 1 (1981)
P. N. T. Wells	205	Noninvasive Cardiovascular Measurements
	207	Letters
	209	Bibliography
	231	Reports
	233	Announcements
	235	Calender
		NUMBER 3
Linda Joynt and **Richard L. Popp**	237	The concept of three dimensional resolution in echocardiographic imaging
V. N. Gupta, P. K. Bhagat, C. E. Ott and **A. M. Fried**	249	Ultrasonic characterization of acute renal failure

VOL
8
198

R. J. Dickinson and **C. R. Hill**	263	Measurement of soft tissue motion using correlation between *A*-scans
S. B. Barnett and **G. Kossoff**	273	Ultrasonic exposure in static and real time echography
Ernest L. Madsen, James A. Zagzebski and **Gary R. Frank**	277	Oil-in-gelatin dispersions for use as ultrasonically tissue-mimicking materials
Peter G. Sacks, M. W. Miller and **C. C. Church**	289	The exposure vessel as a factor in ultrasonically-induced mammalian cell lysis—I. A comparison of tube and chamber systems
Charles C. Church, H. G. Flynn, M. W. Miller and **P. G. Sacks**	299	The exposure vessel as a factor in ultrasonically-induced mammalian cell lysis—II. An explanation of the need to rotate exposure tubes
S. Z. Child and **E. L. Carstensen**	311	Effects of ultrasound on *Drosophila*—IV. Pulsed exposures of eggs
V. L. Newhouse, R. S. Nathan and **L. W. Hertzler**	313	A proposed standard target for ultrasound Doppler gain calibration
	317	Letters
	325	Bibliography
	351	Reports of Meetings
	355	Calender

NUMBER 4

i. Ultrasound in Medicine and Biology Prize.

ULTRASONIC MAMMOGRAPHY

Guest Editors

C. R. HILL and P. N. T. WELLS

H Minasian and **J. C. Bamber**	357	A preliminary assessment of an ultrasonic Doppler method for the study of blood flow in human breast cancer
A P. Harper, V. P. Jackson, J. Bies, R. Ransburg, E. Kelly-Fry and **J. S. Noe**	365	A preliminary analysis of the ultrasound imaging characteristics of malignant breast masses as compared with X-ray mammographic appearances and the gross and microscopic pathology
Fujio Kasumi, Atsuo Fukami, Keijiro Kuno and **Tamaki Kajitani**	369	Characteristic echographic features of circumscribed cancer

VOL. 8 1982

B. Breyer, E. Ćepulić and F. Žunter	377	Ultrasonic mammography without specialized equipment. Comparison with clinical examination and X-rays
Ernest L. Madsen, James A. Zagzebski and Gary R. Frank	381	An anthropomorphic ultrasound breast phantom containing intermediate-sized scatterers
K. McCarty and W. Stewart	393	A simple calibration and evaluation phantom for ultrasound scanners
Roman Kuc and Kenneth J. W. Taylor	403	Variation of acoustic attenuation coefficient slope estimates for *in vivo* liver
D. E. Robinson, F. Chen and L. S. Wilson	413	Measurement of velocity of propagation from ultrasonic pulse–echo data
Wang Wei-qi and Yao Lin-xin	421	A double beam Doppler ultrasound method for quantitative blood flow velocity measurement
Don P. Giddens and A. M. A. Khalifa	427	Turbulence measurements with pulsed Doppler ultrasound employing a frequency tracking method
	439	Reports
	457	Bibliography
	469	Calendar

NUMBER 5

CONTRAST ECHOCARDIOGRAPHY

Guest Editor

J. ROELANDT

J. Roelandt	471	Review Paper. Contrast echocardiography
Giuseppe Gullace	493	Echocardiographic contrast patterns of the right-side of the heart: clinical significance
G. Kronik	501	Contrast *M*-mode echocardiography in patients with interatrial communications
Richard S. Meltzer, Jos Roelandt, Olchert L. Bastiaans, Luc Plérard, Patrick W. Serruys and Charles T. Lancée	509	Videodensitometric processing of contrast two-dimensional echocardiographic data

VOL
8
198

P. M. Brown, K. W. Johnston, M. Kassam and **R. S. C. Cobbold**	515	A critical study of ultrasound Doppler spectral analysis for detecting carotid disease
S. P. Creekmore, M. M. Graham, G. E. Jahn, R. C. Targett and **M. B. McIlroy**	525	Comparison of methods of recording and analysis of Doppler blood velocity signals in normal subjects
M. S. Kassam, R. S. C. Cobbold, K. W. Johnston and **C. M. Graham**	537	Method for estimating the Doppler mean velocity waveform
William B. Gloersen, Gerald R. Harris, Harold F. Stewart and **Peter A. Lewin**	545	A comparison of two calibration methods for ultrasonic hydrophones
	549	Letters
	553	Reports
	555	Bibliography
	579	Calendar
	581	Erratum

NUMBER 6

	i	Ultrasound in Medicine and Biology Clinical Prize
D. N. White	583	Johann Christian Doppler and his effect—a brief history
Lachlan Ch. de Crespigny and **Hugh P. Robinson**	593	The anatomical basis for the ultrasound diagnosis of cerebroventricular hemorrhage and its sequelae
David H. Evans	605	Some aspects of the relationship between instantaneous volumetric blood flow and continuous wave Doppler ultrasound recordings—I. The effect of ultrasonic beam width on the output of maximum, mean and rms frequency processors.
David H. Evans and **D. Symon MacPherson**	611	Some aspects of the relationship between instantaneous volumetric blood flow and continuous wave Doppler ultrasound recordings—II. A comparison between mean and maximum velocity waveforms in a canine model
David H. Evans	617	Some aspects of the relationship between instantaneous volumetric blood flow and continuous wave Doppler ultrasound recordings—III. The calculation of Doppler power spectra from mean velocity waveforms, and the results of processing these spectra with maximum, mean, and rms frequency processors

VOL. 8 982

Blair A. Keagy, William F. Pharr, David Thomas and **Donald E. Bowes** 625 A quantitative method for the evaluation of spectral analysis patterns in carotid artery stenosis

S. Pinamonti, P. E. Gallenga and **V. Mazzeo** 631 Effect of pulsed ultrasound on human erythrocytes *in vitro*

A. P. Sarvazyan, L. V. Beloussov, M. N. Petropavlovskaya and **T. V. Ostroumova** 639 The action of low-intensity pulsed ultrasound on amphibian embryonic tissues

ECHOCARDIOGRAPHY

Guest Editor
NAVIN C. NANDA

Amitabha Ghosh, Navin C. Nanda and **Gerald Maurer** 655 Three-dimensional reconstruction of echocardiographic images using the rotation method

Anil K. Bhandari and **Navin C. Nanda** 663 Two-dimensional echocardiographic recognition of abnormal changes in the myocardium

Anil K. Bhandari, Navin C. Nanda and **David G. Hicks** 673 Two-dimensional echocardiography of intracardiac masses: echo pattern–histopathology correlation

Bapineedu Gondi and **Navin C. Nanda** 681 Left ventricular inflow obstruction and atrial septal defect: diagnosis by real time two-dimensional echocardiography

Ling S. Ong, Navin C. Nanda, Michael D. Falkoff and **S. Serge Barold** 691 Interatrial septal aneurysm, systolic click and atrial tachyarrhythmia—a new syndrome

Patricia G. Fitzpatrick, Navin C. Nanda, J. Peter Harris, Chloe Alexson and **James A. Manning** 695 Two-dimensional echocardiographic identification of multiple cardiac tumors in a newborn

Sunder M. Iqbal, Richard L. Hehir, Dennis A. Ehrich and **Navin C. Nanda** 701 Right sided endocarditis following Swan–Ganz catheterization: detection by two-dimensional echocardiography

Debabrata Maulik, Vasant D. Saini, Navin C. Nanda and **Mark S. Rosenzweig** 705 Doppler evaluation of fetal hemodynamics

711 Book Reviews

L717 Letters

725 Bibliography

753 Reports

759 Calendar

VOL. 8 1982

DL.
3
982